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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/204,370	12/04/1998	ROOZBEH ATARIUS	040070-238	5440

21839 7590 02/10/2003

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EXAMINER	
LUGO, DAVID B	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 02/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/204,370	ATARIUS ET AL.	
	Examiner	Art Unit	
	David B. Lugo	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,18,19,21,22,24,26,27,29 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,18,19,21,22,24,26,27,29 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 1998* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. The objections made in the previous Office action regarding failure to further limit the subject matter of a previous claim with respect to claims 25 and 30 are withdrawn as the Applicant has satisfactorily addressed the issues raised by the Examiner.

2. Applicant's arguments filed 11/22/02 have been fully considered, but those presented with respect to claims 1-13, 19 and 21 are not persuasive.

3. Regarding claims 1-13, Applicant argues that Kondo does not disclose a first stage for finding a set of more than N paths and a second stage configured to use the set of more than N paths to generate a set of N paths, and further argues that Kondo does not disclose a relationship between the number of fingers in RAKE section 140 and the number of paths detected by searcher 120 or tracked by tracking section 130.

4. In column 7, lines 40-48, Kondo teaches that a tracking path having a correlation level equal to or lower than a given threshold is *removed* from the paths to be subjected to rake synthesis, and that *only higher-order tracking paths* are used for rake synthesis. Therefore, the effect of removing tracking paths or only selecting a certain number of tracking paths for rake synthesis implies that the number of tracking paths are greater than the number of paths selected for rake synthesis.

5. Regarding claims 19 and 21, Applicant argues that Kondo does not disclose that the selector uses k*M correlators to generate M estimates, and respectfully requests a citation in Kondo where a disclosure of the relationship between the number of candidate paths used by searcher section 120 with regard to the number of correlators in tracking section 130 is made.

6. In column 7 lines 1-4, Kondo discloses a time when the search paths are equal in number to the tracking paths. Thus, Kondo discloses that the number of candidate paths produced by searcher section 120 may be equal to the number of correlators comprised in the tracking section.

7. The rejections of claims 1-13, 19 and 21 made in the previous Office action are maintained and are restated below. The rejection of claims 14-16, 18, 22, 24, 26, 27, 29 and 31 made in the previous Office action are withdrawn. Claims 1-16, 18, 19, 21, 22, 24, 26, 27, 29 and 31 are rejected in view of newly cited references Japanese Patent No. 10-164011 to Kitade, and U.S. Patent No. 6,456,827 to Kubo et al.

Claim Objections

8. Claims 21, 22, 24 and 26 are objected to because of the following informalities:

a. Claim 21 should be dependent upon claim 19 instead of claim 20, as claim 20 has been cancelled in the amendment filed 11/22/02.

b. Claim 22, line 4, "[and]" should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-7, 19 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Kondo U.S. Patent 6,222,834.

11. Regarding claims 1 and 19, Kondo discloses, in Fig. 1, an apparatus for configuring a RAKE receiver comprising a searcher section 120 that obtains a plurality of search paths from the correlation peaks detected in a search range, a tracking section 130 that receives the demodulated signal and obtains the correlation level of each path, and a correlation demodulation path selection section 160 that designates a subset of paths to be subjected to correlation demodulation rake synthesis in a rake section 140 (see col. 3 line 1 to col. 4 line 27). Kondo further states in column 7, lines 40-48 that a tracking path having a correlation level equal to or lower than a given threshold is removed from the paths to be subjected to rake synthesis, and that only higher-order tracking paths are used for rake synthesis. Therefore, the effect of removing tracking paths or only selecting a certain number of tracking paths for rake synthesis implies that the number of tracking paths are greater than the number of paths selected for rake synthesis. Kondo further teaches in column 7, lines 1-4, that that the number of candidate paths produced by the searcher section may be equal to the number of correlators in the tracking section. Thus, Kondo teaches that the selector uses k*M correlators to generate M estimates, where k is considered equal to one.

Regarding claims 2 and 21, the searcher section 120 uses an input signal to find a plurality of search paths comprising M paths, and the tracking section obtains the correlation level of each tracking path to obtain the correlation level of each path and generate estimates to be used to select the paths for rake synthesis.

Regarding claims 3 and 4, the searcher section 120 uses an input signal to find a plurality of search paths comprising M paths (where M is considered equal to one). The searcher section is described in column 4 lines 31-44 as detecting a first search path, a second search path, a third search path, etc. The tracking section obtains the correlation level of each path, thus performing 3*M correlations to obtain the correlation level of each path and generate estimates comprising M estimates to be used to find the second set of paths.

Regarding claims 5-7, the tracking section uses the input signal and the previously generated candidate paths in the selection or derivation of new candidate paths designated by correlation demodulation path selection section for rake synthesis.

12. Claims 1-7, 19 and 21 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Kitade Japanese Patent No. 10-164011 (English translation).

13. Regarding claim 1, Kitade discloses a RAKE receiver with N fingers in Figs. 1 and 2 comprising a first stage (searcher 100/200) using an input signal to find a set of more than N paths, a second stage (tracker 102/202) using the first set of more than N paths and the input signal to generate a set of N paths, and a third stage (selector 106/206) configured to use the set of N paths to configure the N fingers (104/204) of the Rake receiver (see paragraph 15).

14. Regarding claim 2, the first stage is configured to find a set of M paths, and the second stage comprises M correlators to generate the set of N paths.

15. Regarding claim 3, Kitade further teaches the use of 3*M correlators to generate M estimates in paragraph 21, as the correlation value of a peak value output by the searcher and the correlation values 1 chip before and 1 chip in front of the peak value are tracked.

16. Regarding claim 4, the M estimates are used to generate a second set of paths.

17. Regarding claims 5-7, Kitade describes in paragraph 17 that a new set of N paths are created from the input signal and the first set of more than N paths.

18. Regarding claim 19, Kitade discloses a RAKE receiver in Figure 2 comprising a searcher 200 using an input signal to find a set of M candidate paths, a selector (202, 210, 209, 206) using the input signal and the candidate paths to select a smaller set of candidate paths, where the selector comprises k*M correlators to generate M estimates (see paragraph 21).

19. Regarding claim 21, the M estimates are used to generate the smaller set of candidate paths.

Claim Rejections - 35 USC § 103

20. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

21. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Tran U.S. Patent 6,269,075.

Regarding claim 8, Kondo discloses an apparatus for configuring a RAKE receiver where searcher section 120 uses the correlation peaks from the correlation of the demodulated signal and a spread code.

Kondo does not expressly state that the output of a matched filter is used in the generation of a set of candidate paths.

Tran discloses a matched filter in Fig. 1, the output of which is provided to a searcher.

It would have been obvious to one of ordinary skill in the art to use a matched filter as disclosed by Tran in the apparatus of Kondo because the matched filter helps reject out-of-band interference and noise.

Regarding claim 10, the tracking section 120 and the correlation demodulation selection section 160 are considered to be active generating new subsets of paths while the searcher section is actively generating new sets of candidate paths.

22. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Tran as applied to claim 8 above, and further in view of Pombo et al. U.S. Patent 5,799,256.

Kondo and Tran disclose all of the limitations of claim 9, except that the searcher may be inactive, thereby not generating candidate paths.

Pombo teaches a searcher that may be set to a low-power mode when not searching, as stated in column 5 lines 38-42.

It would have been obvious to one of ordinary skill in the art to use the teaching of deactivating a searcher as taught by Pombo in the RAKE receiver of Kondo-Tran in order to minimize power consumption as stated by Pombo in column 1 lines 33-42.

23. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Pombo et al.

Regarding claim 11, Kondo discloses an apparatus for configuring a RAKE receiver as discussed above, but does not disclose that the apparatus further comprises a quality signal, such that a new set of paths are generated when the quality signal is less than a threshold value.

Pombo discloses a radio receiver comprising a quality signal (RSSI) in column 2 lines 9-14, such that when the quality of a received signal falls below a threshold value, a signal with a higher quality is used.

It would have been obvious to one of ordinary skill in the art to use the teaching of a quality signal as disclosed by Pombo in the apparatus of Kondo so a new search can be made

when the quality signal falls below a threshold value, in order for signal with the highest quality to be processed.

Regarding claim 12, the RAKE receiver will continue to use the subset of the candidate paths until new candidate paths are obtained.

Regarding claim 13, Kondo does not expressly disclose the use of a counter where a new set of candidate paths are generated when the counter is greater than a pre-set value.

Pombo discloses the setting of a search period to a pre-set amount of time, above which a new search is performed (see column 10 lines 7-30).

It would have been obvious to one of ordinary skill in the art to employ the teaching of setting a search period to a pre-set amount of time as taught by Pombo in the receiver of Kondo so a search can be done as frequently as needed for accurate operation.

24. Claims 8-10, 13-16, 18, 22, 24, 26, 27, 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitade in view of Kubo et al. U.S. Patent 6,456,827.

25. Regarding claim 8, Kitade discloses a RAKE receiver as discussed above, and further discloses that the searcher comprises correlators, but does not expressly disclose that the searcher comprises a matched filter.

26. Searchers using matched filters are well known in the art (see Kubo et al., col. 5, line 58).

27. It would have been obvious to one of ordinary skill in the art to use a searcher using a matched filter in the RAKE receiver of Kitade because searchers using matched filters and searchers using correlators are well-recognized art equivalents.

28. Regarding claim 9, Kitade discloses a RAKE receiver as discussed above, and further describes in paragraph 17 that the second stage can generate a new set of N paths from the first set of more than N paths.

29. Kitade does not expressly disclose that the searcher is inactive when the second stage generates the new set of N paths.

30. Kubo et al. disclose a RAKE receiver where a searcher is put in an inactive mode (col. 8, lines 41-45).

31. It would have been obvious to one of ordinary skill in the art to use a searcher that may be placed in an inactive mode as disclosed by Kubo et al. in the RAKE receiver of Kitade in order to conserve power consumed by the searcher.

32. Regarding claim 10, the second stage is configured to generate a new set of N paths while the first stage is active generating a new set of more than N paths.

33. Regarding claim 13, Kitade discloses a RAKE receiver as discussed above, but does not expressly disclose that the apparatus comprises a counter, the first stage configured to generate a new set of more than N paths when the value of the counter is greater than a pre-set value.

34. Kubo et al. disclose a RAKE receiver where a sleep timer 54 is started by a signal from a counter, and a search operation is not performed until a set time elapses (col. 8, lines 41-45).

35. It would have been obvious to one of ordinary skill in the art to use a counter as disclosed by Kubo et al. to control the search frequency of a searcher in the RAKE receiver of Kitade in order to conserve power consumed by the searcher.

36. Regarding claim 14, Kitade teaches a RAKE receiver comprising a searcher (200) using an input signal to find a set of candidate paths and a selector (202, 210, 209, 206) configured to

use the input signal and the candidate paths to select a subset of candidate paths used to configure the RAKE receiver. Kitade further describes in paragraph 17 that the selector can generate a new subset of paths from the first set of candidate paths.

37. Kitade does not expressly disclose that the searcher is inactive when the selector generates the new subset of paths.

38. Kubo et al. disclose a RAKE receiver where a searcher is put in an inactive mode (col. 8, lines 41-45).

39. It would have been obvious to one of ordinary skill in the art to use a searcher that may be placed in an inactive mode as disclosed by Kubo et al. in the RAKE receiver of Kitade in order to conserve power consumed by the searcher.

40. Regarding claim 15, the searcher is configured to find a set of M paths, and the second stage comprises M correlators to generate the subset of candidate paths.

41. Regarding claim 16, Kitade discloses a RAKE receiver as discussed above, and further discloses that the searcher comprises correlators, but does not expressly disclose that the searcher comprises a matched filter.

42. Searchers using matched filters are well known in the art (see Kubo et al., col. 5, line 58).

43. It would have been obvious to one of ordinary skill in the art to use a searcher using a matched filter in the RAKE receiver of Kitade because searchers using matched filters and searchers using correlators are well-recognized art equivalents.

44. Regarding claim 18, the selector is configured to generate a new subset of paths while the searcher is active generating a new set of candidate paths.

45. Regarding claims 22 and 27, Kitade teaches a method for configuring a RAKE receiver where a searcher 200 finds and searches a first set of paths to generate a first set of correlation values, a selector 206 selects a second set of paths from the first set of paths based on a second set of correlation values generated by tracking correlators 202. Kitade further describes in paragraph 17 that the selector can update the second set of paths from the first set of paths.

46. Kitade does not expressly disclose that the searcher is inactive not updating the first set of paths when the selector is updating the second set of paths.

47. Kubo et al. disclose a RAKE receiver where a searcher is put in an inactive mode (col. 8, lines 41-45).

48. It would have been obvious to one of ordinary skill in the art to use a searcher that may be placed in an inactive mode as disclosed by Kubo et al. in the RAKE receiver of Kitade in order to conserve power consumed by the searcher.

49. Regarding claims 24 and 29, the second paths are updated when the searcher generates a new first set of paths.

50. Regarding claims 26 and 31, Kitade discloses tracking correlators 202 for tracking the first set of paths.

51. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitade in view of Bruckert et al. U.S. Patent 5,987,012.

52. Regarding claim 11, Kitade discloses a RAKE receiver as discussed above, but does not expressly disclose that the searcher generates a new set of paths when a quality signal is less than a threshold value.

53. Bruckert et al. disclose in column 4 lines 1-11, a searcher that searches for signals of higher quality and strength when a current signal falls below an acceptable quality value.

54. It would have been obvious to one of ordinary skill in the art to use the teachings of Bruckert et al., namely searching for a higher quality signal when a current signal falls below an acceptable quality value, in the RAKE receiver of Kitade in order to reduce errors associated with processing signals of poor quality.

55. Regarding claim 12, the third stage is configured to use paths from the second stage until the first stage generates a new set of paths.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David B. Lugo** whose telephone number is **(703) 305-0954**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

David B. Lugo
Patent Examiner

2/3/03

STEPHEN CHIN
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